

CLAIMS

It is claimed:

- 1 1. An apparatus for loading mail objects, comprising:
2 a bucket assembly which holds a container;
3 an actuator system moving the bucket assembly between at least an upright
4 position, an intermediate tilt position and a full tilt position;
5 at least one sensor which detects whether the container has reached a fill capacity
6 at each of the upright position, the intermediate tilt position and the full tilt position; and
7 a feedback control system which controls an indexing of the bucket assembly, via
8 the actuator system, between the upright position, the intermediate tilt position and the
9 full tilt position,
10 wherein in the intermediate position, packages or other mail objects are permitted
11 to settle within the container such that additional packages or other mail objects can be
12 introduced into the container in the intermediate position.
- 1 2. The apparatus of claim 1, further comprising a sensor determining whether any
2 variable sized mail holding container is properly positioned within the bucket assembly.
- 1 3. The apparatus of claim 1, wherein the intermediate tilt position and the full tilt
2 position minimize damage to the packages or other mail objects.
- 1 4. The apparatus of claim 1, wherein the bucket assembly includes an open sided
2 configuration for accommodating variable sized mail container.
- 1 5. The apparatus of claim 1, further comprising a safety sensor associated with the
2 actuator assembly to ensure shut down of the actuator assembly based on a detected
3 problem.

- 1 6. The apparatus of claim 1, further comprising at least an additional sensor to detect
2 other positions of the bucket assembly for providing signal controls to at least control
3 movement of the bucket assembly.
- 1 7. The apparatus of claim 6, wherein the other positions is at least one of an upright and
2 down position.
- 1 8. The apparatus of claim 1, further comprising a chute sensor which detects package or
2 mail object backlog within the chute upstream from the bucket assembly.
- 1 9. The apparatus of claim 1, further comprising a cradle assembly which holds the bucket
2 assembly, the cradle assembly being coupled to the actuator system.
- 1 10. The apparatus of claim 9, wherein the cradle assembly includes a cradle shaft
2 coupled to a mounting system of a frame assembly.
- 1 11. The apparatus of claim 9, wherein the cradle assembly further includes lift ribs
2 coupled to a mount assembly of the actuator system.
- 1 12. The apparatus of claim 1, wherein the actuator system is one of a hydraulic system,
2 air cylinder and screw-type system.
- 1 13. The apparatus of claim 1, wherein the actuator system includes a linkage system
2 which assists in the titling and other movements of the bucket assembly.
- 1 14. The apparatus of claim 1, wherein the bucket assembly includes a floor assembly and
2 a rear wall assembly for supporting any variable sized containers, the rear wall assembly
3 including a substantially coplanar surface, where one surface of the coplanar surface is

4 raised with respect to another surface of the coplanar surface.

1 15. The apparatus of claim 14, wherein the raised coplanar surface permits packages to
2 be introduced into a half sized container while minimizing false trips of at least one of the
3 at least one sensors.

1 16. The apparatus of claim 1, wherein the feedback control system is a positional
2 feedback system associated with the actuator assembly for controlling the movement of
3 the bucket assembly.

1 17. A loading system, comprising:

2 a transporting and sorting system, including:

3 an induction mechanism that introduces packages onto a transporting
4 system which transports the packages from the induction mechanism to a plurality of drop
5 off positions;

6 a chute associated with each of the plurality of drop off positions; and

7 a loading apparatus, comprising:

8 a bucket assembly which holds a container;

9 an actuator system moving the bucket assembly between at least an upright
10 position, an intermediate tilt position and another tilt position;

11 at least one sensor which detects whether the container has reached a fill
12 capacity at each of the upright position, the intermediate tilt position and the another tilt
13 position; and

14 a feedback control system which controls an indexing of the bucket
15 assembly, via the actuator system, between the upright position, the intermediate tilt
16 position and the another tilt position.

1 18. The loading system of claim 17, further comprising:

2 a sensor determining whether the container is properly positioned within the

3 bucket assembly;

4 a safety sensor associated with the actuator assembly ensuring shut down of the
5 actuator assembly based on a detected problem;

6 at least an additional sensor to detect at least one of an upright and down position
7 of the container; and

8 a chute sensor located proximate to the chute which detects package backlog on
9 the chute.

1 19. The loading apparatus of claim 17, wherein the feedback control system is a
2 positional system associated with the actuator assembly.

1 20. The loading apparatus of claim 17, wherein the feedback control system includes
2 position sensors providing feedback signals to a controller for indexing the movement of
3 the bucket assembly.

1 21. A method for loading packages, comprising the steps of:
1 placing a container in a first tilt position;
2 detecting when the container is full at the first tilt position;
3 indexing the container to an intermediate tilt position to enable settling of contents
4 within the container;
5 detecting when the container is full at the intermediate tilt position; and
6 indexing the container to an upright position.

1 22. The method of claim 21, further comprising the steps of detecting when the container
2 has reached full capacity in the upright position and removing the container.

1 23. The method of claim 21, further comprising the step of detecting whether the
2 container is properly positioned prior to loading the container with the content.

1 24. The method of claim 21, further comprising the step of detecting any problems and
2 stopping the loading of the container.

1 25. A control system for loading packages, comprising:
2 a module which detects when the container is full at a first tilt position, an
3 intermediate tilt position and an upright position;
4 a module which detects a position of the container; and
5 a module which controls a movement of the container based at least on a capacity of
6 the container.

1 26. The control of claim 25, wherein the controlling module is a positional sensor.